

***PEDETONTUS GERSHNERI*, A NEW SPECIES OF MACHILIDAE FROM THE INTERIOR HIGHLANDS OF NORTH AMERICA (INSECTA: MICROCORYPHIA)¹**

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ABSTRACT: *Pedetontus gershneri*, a new species of Microcoryphia, is described from Magazine Mountain, Logan County, Arkansas. The new species was found in leaf litter in dense deciduous forest. The presence of 2 pairs of exsertile vesicles on urosternites II-V indicates a close relationship with *Pedetontus* species in western North America. Labial and maxillary palpi characters distinguish *P. gershneri* from its western relatives. *Machiloides banksi*, recorded for the first time from Arkansas, is found in more xeric habitats under rocks on the south facing slope of the mountain.

The Microcoryphia (jumping bristletails), along with the Protura, Collembola, Diplura and Thysanura, are the most ancient orders of the class Insecta (Boudreaux, 1979). Characterized by the absence of wings and the retention of other plesiomorphic characters such as abdominal styli and exsertile vesicles on some abdominal segments, Microcoryphia are an important link in understanding the early evolution and subsequent radiation of the entire class Insecta. However, few workers have studied these insects in North America. The most recent papers on the North American fauna are by Ferguson (1990) and Wygodzinsky and Schmidt (1980).

Ferguson (1990) has provided a valuable key to the higher taxa, genera and some species in the Microcoryphia and the Thysanura. These two groups are closely related and were, prior to the work of Remington (1954), both included in the order Thysanura. Ferguson's key makes it possible to readily identify the genera found in North America. Wygodzinsky and Schmidt (1980) provided keys, detailed descriptions and distribution records for four species of Microcoryphia occurring in the northeastern states and adjacent Canadian provinces.

In addition to their general comments on the Microcoryphia, Wygodzinsky and Schmidt (1980) described *Pedetontus saltator*, a new species found in Connecticut, Massachusetts, New Jersey, New York and Pennsylvania. Silvestri (1911) had first reported the genus *Pedetontus* from North America and described five new species from California, Oregon, and Colorado. In considering these species Wygodzinsky and Schmidt (1980) noted that three western species (*P. submutans*, *P. persquamosus*, *P. calcaratus*) possessed "two pairs

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of exsertile vesicles on urosternites II-V, whereas the remaining two western species (*P. californicus* and *P. superior*)" and the eastern *P. saltator* have two pairs of vesicles on urosternites II-VI. The new species described here, in regard to exsertile vesicles has two pairs on urosternites II-V. In this regard it is similar to the western species. The new species does differ from the western species in several respects.

Pedetontus gershneri NEW SPECIES

(Figures 1 a-l o)

Description. Color of body uniformly dark, almost black when first collected (except where scales have been removed or intersegmental membranes are exposed); total body length 14-15 mm. Head large, median dark area extending from beneath compound eyes to 1/2-3/4 length of frontal area (Fig. 1a). Ocelli dark, soule-shaped, and, in freshly collected specimens, surrounded by a narrow, distinct pale margin (Fig. 1a). Antennal scape, segment 2 and basal segments of the palpi uniformly dark, without color pattern and densely covered with scales (Fig. 1g); antennal flagellum dark in basal one-fourth and distal one-half, the second one-fourth lighter in color. Last two segments of labial palpi lighter in color than basal segments (Fig. 1d). Apical segments of maxillary and labial palpi without strong spines. Basal segment of maxillary palpi without a lateral lobe. Length of antenna and flagellum 7.75 mm. Legs uniformly dark, tarsal claws white. Stylets of the urosternites white, those of abdominal segment 9 shorter than coxites. Exsertile vesicles on urosternites II-VII, two pairs on segments II-V. Ovipositor surpassing apex of abdominal segment 9, pale. Gonapophyses of the primary type consisting of 55-60 articles. Cerci 5.5 mm in length, one apical claw; caudal filament 11-12 mm in length.

Holotype. Female, Mossback Ridge, Magazine Mountain (near Paris), Logan County, Arkansas; June, 1990, pitfall trap; collector J. Dacus. Deposited in the American Museum of Natural History, New York, NY.

Paratypes. All material is from different areas on Magazine Mountain, Arkansas, Logan Co., near Paris. Mossback Ridge, June 1989, pitfall trap, R. T. Allen collector, 2 immatures; South Rim, West Cabin Site, R. T. Allen collector, 17 June 1989, pitfall trap 2D, 1♀; South Rim, West Cabin Site, R. T. Allen collector, 17 June 1989, pitfall trap 2B, 1♂, 2♀; Mossback Ridge, 16 June 1990, pitfall trap, B. Leary collector, 2♂♂, 3♀; Mossback Ridge, June 1990, pitfall trap, J. Dacus collector, 2♂♂, 5♀; East End Log Road, 3rd stream crossing, 21 April 1991, R. T. Allen collector, in leaf debris, elev. 1700 ft. 1♀, 1 immature; Dripping Springs, R. T. Allen, June, 1992, R. T. Allen collector, in leaf debris, 1♀, 3 immatures.

Etymology. This species is named in honor of Caroline and Larry Gershner of DeValls Bluff, Arkansas. The Gershners have worked diligently to instill an appreciation of the natural sciences in hundreds of high school students.

Diagnosis. *Pedetontus gershneri* appears to belong to the western group of *Pedetontus* species with 2 pairs of exsertile vesicles on urosternites II-V. It may be separated from those species using characters associated with the labial and maxillary palpi.

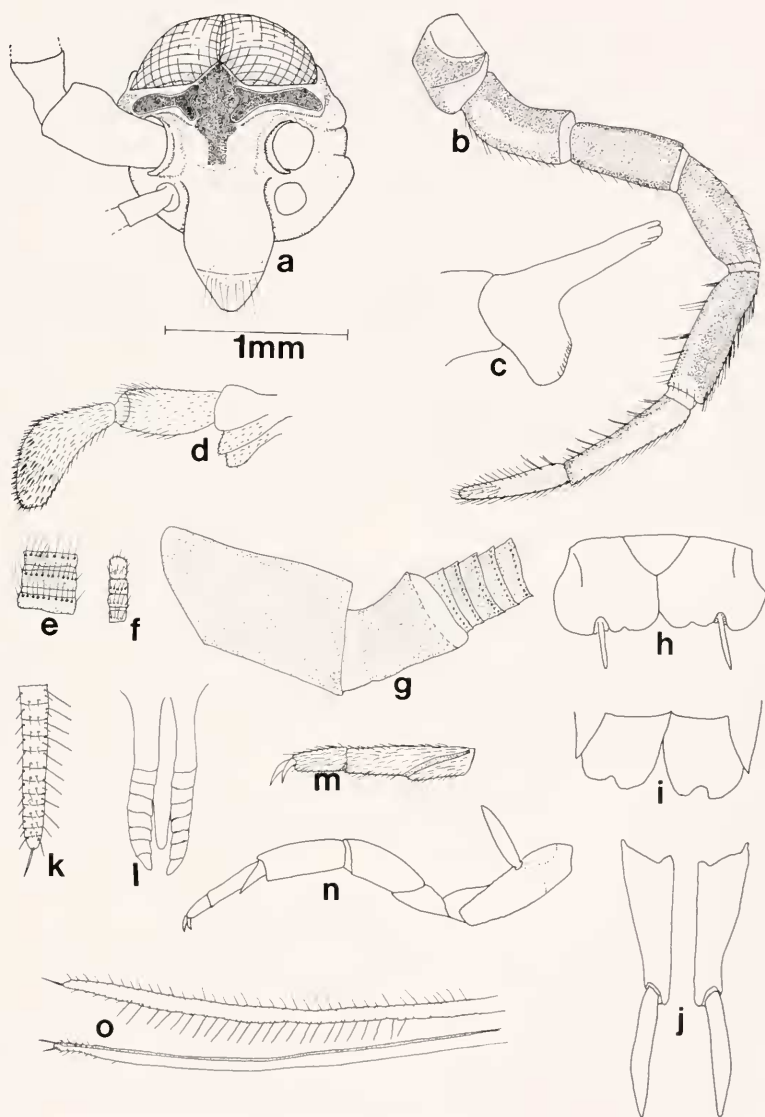
**Fig 1**

Figure 1. *Pedetontus gershneri*: a, frontal view of head, 75X; b, maxillary palp, 37.5X; c, mandible, 150X; d, labial palp, 50X; e, antennal segments, 100X; f, terminal antennal segments, 100X; g, basal antennal segments, 75X; h, sternites of abdominal segment IV, 75X; i, sternites of abdominal segment VIII, 75X; j, coxites of 9th segment, 75X; k, apex of anterior gonopophysis, 150X; l, male genital area, 150X; m, tarsi and claws of hind leg, 150X; n, hind leg, 37.5X; o, anterior and posterior gonapophysis, 75X.

DISCUSSION

The presence of only one pair of exsertile vesicles on urosternite 6 places the new species with the 3 western *Pedetontus* species. The absence of strong spines on the apical segments of the maxillary and labial segments separate the new species from *P. persquamoas* and *P. calcaratus*. *Pedetontus submutans* has strong spines on the apical segment of the labial palpi and the new species does not. Both *P. submutans* and *P. calcaratus* have distinct lobes and long setae on the basal segments of the maxillary palps.

While most species of *Pedetontus* are found in rather dry rock outcrops *P. gershneri* is found on the moist forest floor or among deciduous leaves or sometimes among coniferous pine needles mixed with deciduous leaves. This habitat is strikingly different from the xeric rock ledges inhabited by *Machiloides banksi*, the other species of Microcoryphia found on Magazine Mountain. Wygodzinsky (1967) noted that members of the genus *Neomachilellus* (Meinertellidae) have "adapted ... to an existence far removed from stony outcrops, many species being found on and under bark of trees, on leaves, and on the soil."

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